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BIOM 360.01E: General Microbiology

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General Microbiology. BIOM 360
Summer Semester 2020
Remote Course Syllabus

Instructor: Dr. Jim Battisti. Office – Health Sciences Building 510

Zoom Office Hours: Tuesdays and Thursdays 2:00-3:00pm
-or by appointment-
Email: jim.battisti@umontana.edu

Zoom link to live lecture:
Monday, Tuesday, Wednesday, Thursday 12:00 noon-1:50
https://umontana.zoom.us/j/91056078459

Text: Required. Brock Biology of Microorganisms. Madigan, et al, 15th edition.
You have already paid for this book through your tuition. It is available to you in Moodle. You should be able to access your Moodle account and use RedShelf or Mastering Microbiology to get access to the textbook and other course materials. If you need help please contact the UM Bookstore

UMOnline – Moodle
Live Zoom lectures will take place during the designated time slot (12:00 noon-1:50). Videos of these lectures will be recorded and made available to those who are unable to make it to the live feed. Powerpoint presentations used for zoom lectures will also be made available. I reserve the right to alter the amount of material that will be covered for each exam. This information may initially be emailed rather than posted on Moodle.

Course description
This course is designed to give students a detailed description of the cellular structures and molecular processes that are used by prokaryotic cells (Bacteria and Archaea) and eukaryotic cells (Protozoa, Algae, Fungi, parasites) to live in nature and cause disease in humans and other vertebrates. Students are expected to learn host defense systems, infectious disease agents (bacterial, viral, fungal, and parasitic) and methods of treatment and prevention of these disease agents. **Upon attending lectures (live or recorded) and successful completion of this course, students should have a good understanding of how to protect themselves and others from infectious disease, and be academically prepared to enter courses of study in microbiology and/or health related professions.**

Learning outcomes
Part 1. Definition of types of microorganisms to be studied in class. Light and Electron Microscopy. Structure and function of prokaryotic and eukaryotic cells. Specifics of metabolism in microbes and their metabolic pathways. Introduction to microbial genetics. Growth and growth conditions for microbes.

Part 2. Introduction to Microbial Genomics. Metabolic Regulation of Microbes. Genetics of bacteria. Introduction to Genetic Engineering and Biotechnology. Viruses and Virology.

Part 3. Metabolic diversity of microorganisms. Functional Diversity of microorganisms. Survey of the diversity of Bacteria, Archaea, and Eukaryotic microorganisms.

Part 4. Microbial interactions with humans including pathogenesis. The study of immunology including innate and adaptive immunity. Molecular Immunology. Introduction to Diagnostic Microbiology.

Part 5. Introduction to Epidemiology. Study of selected human diseases and their methods of transmission. This course will cover a variety of common diseases caused by bacteria and viruses and if time allows protozoans, fungi, and parasites. Each disease studied will focus on the responsible pathogen, disease symptoms, treatment, and epidemiology.

Quiz and Exam Schedule.

Due to the short time available for this class and the amount of material to be covered there will be weekly quizzes and exams. The quizzes and exams will be a combination of multiple choice, fill-in-the-blank, and short essay questions. Exam questions will come from topics and materials covered in the lectures and supplemented by material from the textbook. There will be 5 quizzes and 5 1-hour lecture exams during the semester. Each quiz will be worth 40 points and each lecture exam will be worth 100 points. There will also be a written assignment for this class that is worth **100** points.

Quiz 1 – Thursday, July 9th	Exam 1 – Tuesday, July 14th
Quiz 2 – Thursday, July 16th	Exam 2 – Monday, July 20th
Quiz 3 – Thursday, July 23rd	Exam 3 – Monday, July 27th
Quiz 4 – Thursday, July 30th	Exam 4 – Monday, August 3rd
Quiz 5 – Thursday, August 6th	Exam 5 – Thursday, August 13th
(Paper Due – Monday, August 10th)	

Quizzes and exams will be administered by 2 methods:

Method 1: ALL QUIZZES as well as Exams 1 and 2, will be administered by email, and students will be given 3 days (72h) to complete them to receive full points. For each day (24h) late, there is a 4-point reduction in score of quiz and a 5-point reduction in final score of exam.

Method 2: Exams 3, 4, and 5 will be available for 3 days, but students will be limited in their time to complete the exam. Rather than being allowed 72h to complete the task by email (as in Method 1), these 3 exams will be administered via Moodle with a time limit, to test your skills.

Written assignment (100 points toward grade):

Topic due by Monday August 3rd .
Paper due by 5pm Monday August 10th.

Each student will choose a topic on a disease-causing microorganism or a specific disease of importance to human health for a **2 page single-spaced paper.** This paper is to be directed to a public audience of non-scientists. You will attempt to illustrate your topic in a way that will help the audience understand the science behind the topic.

As microbiologists or health professionals you must be able to clearly explain a pathogenic microorganism (*Borrelia, Yersinia, Vibrio, etc.),* **its mode of transmission** (arthropod, water-borne, air-borne, etc.), **pathology** (sepsis, fever, malaise, death, diarrhea, bacteremia, viremia, etc), **and treatment/prevention (**no treatment, fluids, transfusion, antibiotics, antifungals, wash hands, wear mask, go to emergency room, etc.) **to a public that might not understand these topics or may have been misled by other information outlets. Maybe it's a microbe/disease that's of particular interest to you?** The paper will be graded on clarity of writing, scientific validity, and quality of the writing (grammar, spelling, completeness, etc.). Please cite a minimum of 4 references at the end of the 2 page paper. Good places to look for information are the Centers for Disease Control https://www.cdc.gov/ and PubMed https://pubmed.ncbi.nlm.nih.gov/ **Paper topic and paper may be emailed to** jim.battisti@umontana.edu or if necessary, other arrangements can be made**. Late papers will be penalized 10 points for every day late.**

Grading:

In this course there will be 5 quizzes worth 40 points each for a total of 200 points. The 5 exams are worth 100 points each for a total of 500 points. Your grade will be calculated as a percentage of the total possible quiz (200), exam (500), and written assignment (100) points combined (800). The following grading scheme will be used:

Total points		Percentage		Grade
800 - 720	=	100 – 90 %	=	A
719 - 640	=	89.9 – 80 %	=	B
639 - 560	=	79.8 – 70 %	=	C
559 - **480**	=	69.8 – 60 %	=	D
< 479	=	59.8	=	F

You need 480 points to Pass the course. If you are taking this course as Pass/No Pass the University requirement for a Pass grade is the equivalent of a "C" or 70% or higher cumulative average on quizzes and exams.

Lectures and Make-up exams.

Please keep up with the lectures and the reading in the textbook. This course is taught in a very short time and the material will be covered very quickly so missing a day could put you behind in the course. The quizzes and exams will be available on Moodle so that you should be able to take them no matter what your work or home schedule. However:

Make-up quizzes and exams will be permitted only with compelling and supported reasons. Make-ups will be scheduled at the convenience of the instructor.

Instructor's policy for accommodating disabilities
The University of Montana assures equal access to instruction through collaboration between students with disabilities, instructors, and Disability Services for Students. If you think you may have a disability adversely affecting your academic performance, and you have not already registered with Disability Services, please contact Disability Services in Lommasson Center 154 or 406.243.2243. I will work with you and Disability Services to provide an appropriate modification.

Instructor's policy on academic honesty and plagiarism.
All students must practice academic honesty. Academic misconduct is subject to an academic penalty by the course instructor and/or a disciplinary sanction by the University. All students need to be familiar with the Student Conduct Code.